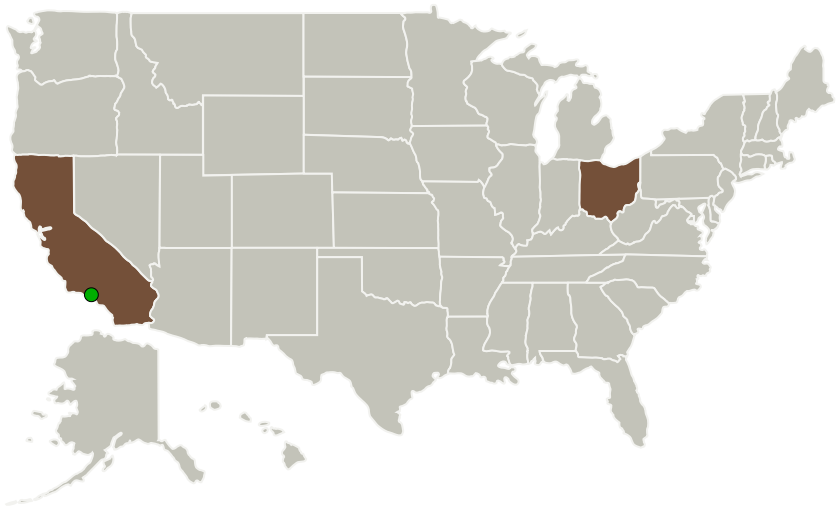
High Regression Rate, High Density Hybrid Fuels, Phase I

Completed Technology Project (2014 - 2014)

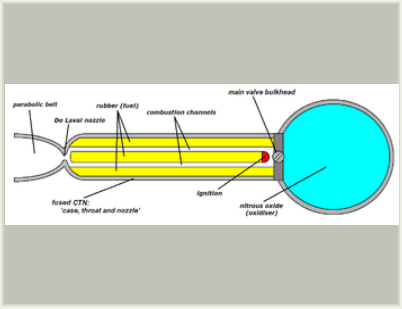
Project Introduction

This SBIR program will investigate high energy density novel nanofuels combined with high density binders for use with an N2O oxidizer. Terves has developed processes for stabilizing advanced high Isp fuels, such as LiBH4 to make them stable in thermoplastic binders such as PE. If they combust efficiently and have suitable regression rates and stability, These materials can provide hybrid Isp's above 300 and density Isp's above 450 seconds with self-pressurizing N2O oxidizers, enabling very low cost propulsion systems to be designed. This program will fabricate ultrafine- and nano- metal boride and hydride fuels, disperse them into high density binders, and evaluate their combustion efficiency in a hybrid test motor

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Terves Inc.	Lead Organization	Industry	Euclid, Ohio
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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Primary U.S. Work Locations	
California	Ohio

Project Transitions

June 2014: Project Start

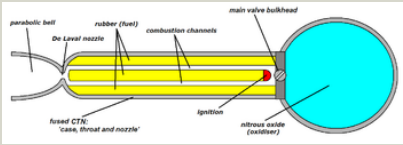
December 2014: Closed out

Closeout Summary: High regression rate, high density hybrid fuels, Phase I Pr oject Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/137494)*

Images



Briefing Chart Image
High regression rate, high density hybrid fuels, Phase I *(https://techport.nasa.gov/image/134622)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Terves Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

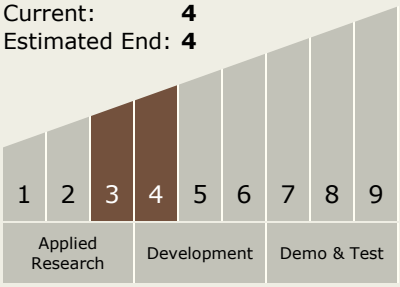
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Andrew Sherman

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.5 Hybrids

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System